

WHAT IS CLAIMED IS:

1. A hydraulic system for a device, the system comprising:
a pump including first and second inlet/outlet ports, the pump operating to reversibly move the device between a first position and a second position; and
a hydraulic cylinder in fluid communication with the pump and including a rod end coupled with one of the first and second ports and a piston end coupled with the other one of the first and second ports.
2. The system of claim 1 wherein the device comprises a ramp.
3. The system of claim 2 wherein the first position comprises a fully stowed orientation and the second position comprises a fully deployed orientation.
4. The system of claim 2 wherein the ramp comprises a vehicle wheelchair ramp.
5. The system of claim 1 wherein the pump comprises a bi-directional displacement pump.
6. The system of claim 1 further comprising:
a reservoir in fluid communication with the pump;
a first valve coupling the pump with the rod end, the first valve in fluid communication with the reservoir; and
a second valve coupling the pump with the piston end, the second valve in fluid communication with the reservoir.
7. The system of claim 6 wherein the first and second valves comprise three-way valves.
8. The system of claim 7 wherein the first and second three-way valves further comprise a normal biasing to provide a hydraulic loop between the cylinder and the reservoir, the loop independent from the pump.

9. The system of claim 8 wherein the normal biasing comprises a spring.
10. The system of claim 7 wherein the first and second three-way valves comprise spring-biased shuttle valves.
11. The system of claim 7 wherein at least one of the first and second three-way valves comprises an electrically-actuated valve.
12. The system of claim 11 wherein the electrically-actuated valve comprises a solenoid valve.
13. The system of claim 7 wherein the first and second three-way valves comprise electrically-actuated valves.
14. The system of claim 13 wherein the electrically-actuated valves comprise solenoid valves.
15. The system of claim 2 further comprising a safety means for preventing one or more of a stowing and deployment operation of the ramp.
16. The system of claim 15 wherein the safety means comprises one or more of a first relief valve inline between the pump and the rod end and a second relief valve inline between the pump and the piston end, the first and second relief valves independently adjustable to regulate the pressure at the respective ends.
17. The system of claim 6 further comprising:
 - a first restriction means coupling the rod end with the reservoir for throttling a hydraulic fluid return flow during a first gravity-movement stage of device operation; and
 - a second restriction means coupling the piston end with the reservoir for throttling a hydraulic fluid return flow during a second gravity-movement stage of operation.

18. The system of claim 17 wherein the first and second restriction means comprise restriction orifices.

19. The system of claim 18 wherein the restriction orifices are disposed within a manifold in fluid communication with the pump.

20. The system of claim 17 wherein the first restriction means is disposed between the rod end and the first three-way valve and the second restriction means is disposed between the piston end and the second three-way valve.

21. The system of claim 1 further comprising a second hydraulic cylinder in fluid communication with the pump and cooperating with the first hydraulic cylinder.

22. The system of claim 2 wherein the pump operates relative to the orientation of the ramp such that the pump moves the ramp from a fully stowed orientation to a generally vertical orientation and from a fully deployed orientation to a generally vertical orientation.

23. The system of claim 22 further comprising a sensing means linked with the pump for selectively actuating and deactuating the pump relative to the orientation of the ramp.

24. The system of claim 23 wherein the sensing means comprises a cam and switch arrangement.

25. The system of claim 22 further comprising a gate valve disposed between the pump and the cylinder, the gate valve operating relative to the orientation of the ramp for facilitating ramp movement in an active stage of operation..

26. The system of claim 25 wherein the gate valve is manually operated.

27. The system of claim 25 wherein the gate valve is electrically operated.

28. The system of claim 17 further comprising:

a first gate valve in parallel with the first restriction means, the first gate valve operating to bypass the first restriction means during a stage of active deployment; and

a second gate valve in parallel with the second restriction means, the second gate valve operating to bypass the second restriction means during a stage of active stowage.